

## What is claimed is:

**[Claim 1]** 1. A power-saving method for a station used in a WLAN, an access point sending a plurality of fragments to the station during an interval which is between a first beacon and a second beacon adjacent to the first beacon, the station receiving the plurality of fragments at different time points after receiving the first beacon, the power-saving method comprising:

- if a period between the first beacon and a fragment of the plurality of fragments received by the station after the first beacon is smaller than a predetermined time, setting a MORE DATA BIT as enabled and the station is in an active mode; and
- if a period between the first beacon and a fragment of the plurality of fragments received by the station after the first beacon is not smaller than a predetermined time, setting the MORE DATA BIT as disabled and the station is in a power saving mode.

**[Claim 2]** 2. The power-saving method of the claim 1 further comprising informing the access point that the station is in the power saving mode.

**[Claim 3]** 3. The power-saving method of the claim 1 further comprising the access point delivering a traffic indication to the station through the first beacon.

**[Claim 4]** 4. The power-saving method of the claim 1 further comprising the station delivering a PS-Poll control packet to the access point.

**[Claim 5]** 5. The power-saving method of the claim 4 further comprising the access point recognizing the PS-Poll control packet and sending a buffer packet to the station.

**[Claim 6]** 6. The power-saving method of the claim 1 further comprising dividing a packet into the plurality of fragments.

**[Claim 7]** 7. The power-saving method of the claim 6 further comprising sending the plurality of fragments to a single-packet MAC buffer.

**[Claim 8]** 8. The power-saving method of the claim 7 further comprising sending the plurality of fragments to a WLAN from the single-packet MAC buffer.

**[Claim 9]** 9. The power-saving method of the claim 1 wherein the plurality of fragments comprises sound information.

**[Claim 10]** 10. The power-saving method of the claim 1 wherein the wireless communication system is wireless IP phone.

**[Claim 11]** 11. The power-saving method of the claim 1 wherein a ratio of the predetermined time to the interval between the first beacon and the second beacon is between 0 and 1 inclusive.

**[Claim 12]** 12. A wireless communication system with a power-saving function, the wireless communication system comprising:

an access point for sending a plurality of periodic beacons and sending a plurality of fragments during an interval between a first beacon and a second beacon adjacent to the first beacon, the first beacon comprising a traffic indication; and

a station for receiving the first beacon and receiving the plurality of fragments at different time points after the first beacon is received, the station comprising:

a processor for setting a MORE DATA BIT as enabled and the station is in an active mode if a period between the first beacon and a fragment of the plurality of fragments received by the station after the first beacon is smaller than a predetermined time, and setting a MORE DATA BIT as disabled and the station is in a power saving mode if a period between the first beacon and a fragment of the plurality of fragments received by the station after the first beacon is not smaller than the predetermined time.

**[Claim 13] 13.** The wireless communication system of the claim 12 wherein the station further comprises a transmitter for sending a PS-Poll control packet to the access point.

**[Claim 14] 14.** The wireless communication system of the claim 13 wherein the access point further comprises a logic unit for recognizing the PS-Poll control packet.

**[Claim 15] 15.** The wireless communication system of the claim 13 wherein the access point is further used for sending a buffer packet.

**[Claim 16] 16.** The wireless communication system of the claim 12 wherein the access point further comprises a packet division unit for dividing a packet into a plurality of fragments.

**[Claim 17]** 17. The wireless communication system of the claim 16 wherein the access point further comprises a single-packet MAC buffer for storing the plurality of fragments.